

- Not *Gobius gracilis Jenyns*.
Gobius lepidus Girard, Explorations and Surveys for a Railroad Route, &c., vol. vi., Abbot's Report, Zoology, p. 21 (figured). *Girard*, op. cit., vol. x., Fishes, p. 127, pl. xxva, figs. 5-6. *Girard*, op. cit., vol. x. William-son's Report, Zoology, p. 86.
Lepidogobius gracilis Gill, Annals of the Lyceum of Natural History of New York, vol. vii. p. 14, 1859.
Gobius lepidus Günther, Catalogue of the Acanthopterygian Fishes, &c., vol. iii. p. 78, 1861.
Lepidogobius gracilis Gill, Proc. Academy of Natural Sciences of Phila., 1862, p. 330.
 D. VII. I. 19. A. I. 16. P. 24. V. I. 5+5. I.

The color is tawny or reddish-brown, (thickly dotted with blackish-purple when viewed under the magnifier); the snout, interorbital region and lips, purplish; the branchiostegal membrane dark purple. The fins are also purple, and thickly dotted with darker, especially between the rays.

On the GOBIOIDS of the Eastern Coast of the United States.

BY THEODORE GILL.

Subfamily GOBIINÆ (Bon.) Gill.

Genus GOBIUS Artedi.

Synonymy.

- Gobius Artedi*, Genera Piscium.
Gobius Cuvier, Règne Animal ed, tome ii.
Gobius Cuv. et Val. Hist., Nat. des Poissons, tome xii. p. 1.
Gobius Günther, Cat. Acanthop. Fishes, vol. iii. p. 3.

Body moderately elongated, subcylindrical anteriorly, slowly declining and compressed towards the caudal fin, with the anus little in advance of the middle of the total length, and with the caudal peduncle oblong and not or scarcely contracted at its middle.

Scales moderate, (in 35—55 transverse rows), more or less hexagonal, generally higher than long, pectinated behind, with the nucleus at or next to the posterior angle, and with radiating striæ diverging from it towards the anterior border; scales generally advancing forwards on the crown.

Head oblong, depressed, wider than high, slowly declining to the snout, and with the snout itself, in front, boldly decurved; above conical, rather rapidly narrowed to the snout, whose periphery is convex. Cheeks behind more or less tumid. Eyes moderate, longitudinal elliptical, oblique and looking upwards, closely approximated and situated almost, or wholly, in the anterior half of the head. Opercula unarmed. Operculum moderate, shorter than or equal to the internal between it and the eyes.

Mouth with the cleft longitudinal, ovoid, the supramaxillars under the pupils. Lower jaw even with, or rather shorter than the upper. Intermaxillars little protractile obliquely forwards, with the posterior processes short, the lateral branches thick, little attenuated backwards and above, with a thin elevated crest, generally truncated in front and decurved behind. Supramaxillars longer than the intermaxillars, slightly twisted, towards the ends compressed and decurved, and with a narrow expansion downwards.

Tongue moderate, rather thin, truncated and free in front.

Teeth fixed, acutely conic and curved, pluriserial, enlarged in the outer row. Palate smooth.

Branchial apertures lateral, vertical, bounded above by a membrane attached in front of the upper pectoral rays, below continued in a short slit between the fourth branchiostegal ray and breast; isthmus very wide.

1863.]

Branchiostegal rays five; the fifth very thin and concealed in the membrane.

Dorsal fins distinct; the first scarcely oblong, with six spines, the last of which is remote; the second rather long, (I. 9—16), with the soft rays generally having an anterior simple and posterior forked branch; last ray free.

Anal fin shorter than the second dorsal, (I, 8—14), and ending under its last rays.

Caudal fin broad, rounded behind.

Pectoral fins well developed, produced and rounded behind, with the *upper rays short, deeply branched and filamentous or silk-like*; the rest well defined and normally branched.

Ventral fins inserted below the bases of the pectoral, obliquely infundiform, with the inner rays largest and well connected; the interspinous membrane low.

Type. *Gobius niger* L.

The genus *Gobius*, restricted as it has now been, still contains a number of species, two of which, are English—the *G. niger* L., and *G. pagannellus*, L. upon which the generic characters have been especially verified, they being the types of the genus. A considerable difference exists in the development of the dorsal and anal fins, in different species of the genus.

GOBIOUS CAROLINIENSIS Gill.

The height equals about a fifth of the total length; the caudal peduncle (from the vertical of the anal and dorsal fin to its end) forms about a sixth of the same, and its height equals a ninth. The head enters 4, 1-5 times in the length; its width six times; the diameter of the eye equals a quarter of the head's length and the length of the snout. The caudal fin forms about a fifth of the total length; the pectoral nearly equals the caudal.

1	1	
D. VI. I. 8—	A. L. 7—	P. 18
1	1	

There are about thirty-eight transverse rows of scales and fourteen longitudinal ones between the front of the second dorsal and origin of anal fin.

The color is blackish-brown, indistinctly bordered with darker, and with a darker spot at the base of the caudal fin. There are a few lighter spots on the operculum. The fins are purplish.

A single specimen has been sent from Charleston, South Carolina, to the Smithsonian Institution. The species is most closely allied to *G. saporator*, but differs in some of the proportions, especially the narrower caudal peduncle, and in the number of scales.

Genus GOBIOSOMA Girard.

Synonymy.

Gobiosoma Girard, Proc. Academy of Natural Science of Philadelphia, 1858, p. 169.

Gobiosoma Günther, Catalogue of the Acanthopterygian Fishes, &c. vol. iii. p. 85, 1861.

Gobius sp. *Lac., Mitch., Cuv. et Val. &c.*

Body scaleless, oblong, slowly declining and compressed towards the caudal fin, anus in advance of the middle, the peduncle oblong and not or scarcely contracted, with the back and abdomen transversely rounded, and the sides subvertical.

Head oblong, depressed, much wider than high, declining slowly to the eyes, and thence boldly decurved to the edge of the rather high subtruncated snout; above subcordate, in front of the nape, (and preopercle), diminishing

[Sept.

in width to the snout, whose periphery is convex. Cheeks in front of preoperculum tumid.

Eyes rather small, longitudinal, oblique, distant from each other and situated nearer the middle of the anterior half of the head. Opercular unarmed; the preoperculum hidden in a fleshy mass; the operculum higher than long.

Mouth scarcely longer than wide, and with the cleft scarcely oblique, the supramaxillars passing under most of the eye. Lower jaw rather shorter than the upper, intermaxillars little protractile downwards, with the posterior processes short and the lateral branches thick, little attenuated backwards, and without crests. Supramaxillars longer than the intermaxillars, slightly twisted and curved, compressed behind and surmounted by a longitudinal keel below which the expansion takes place, and at whose end the bone is convex.

Tongue moderate, oblong, truncated and free in front.

Teeth fixed, slender, curved and acute, pauciserial, enlarged in the outer row. Palate smooth.

Branchial apertures lateral, nearly vertical, bounded above by a membrane attached in front of the upper pectoral rays, slightly curved forwards below; isthmus very wide.

Branchiostegal rays five.

Dorsal fins distinct; the anterior oblong, normally with seven slender spines, the last two remote from each other and the preceding. Second dorsal oblong, (I. 10—12), with its rays generally having an anterior simple and posterior forked branch; the last ray free.

Anal fin oblong, (I. 10—12), smaller than the second dorsal and extending less backwards, but of similar structure.

Caudal fin convex behind.

Pectoral fins well developed, convex behind, with the rays distinct and almost all branched.

Ventral fins inserted below the bases of pectoral, rather small and obliquely infunduliform, the inner rays longest and well connected, the interspinous membrane low.

The genus *Gobiosoma* is apparently peculiar to North America, and is represented on both the Eastern and Western coasts. The foreign species referred to it belong to several genera, the *Gobius macrogathus* Blkr. of Japan, differing in the form of the head, &c., may be named *Gymnogobius*; the *G. ophiocephalus* Jenyns, in form and development of fins, *Ophiogobius*; the *G. Nilssonii* D. & K., distinguished by the biradiate first dorsal, may take the name *Crystallogobius*, and *G. stuvitzii* D. & K., *Boreogobius*.

GOBIOSOMA ALEPIDOTUM (Girard.)

Gobius alepidotus, Lac.

Gobius viridipallidus, Mitch.

Gobius Boscii, Cuv. et Val.

Gobius alepidotus = *Gobiosoma* sp. Girard.

Gobiosoma alepidotum, Günther.

D. VII.

Hab.—New York to South Carolina.

Subfamily ELEOTRINÆ (Bon.) Gill.

Genus DORMITATOR Gill.

Synonymy.

Dormitator Gill, Catalogue of the Fishes of the Eastern coast of North America, &c., p. 44 (named only.)

Dormitator Gill, Proc. Academy of Natural Sciences of Phila., 1862, p. 240.

Eleotris Sp. auct.

Prochilus Cuvier, Règne Animal ed. i. tome ii. p. 294

1863.]

Body moderately elongated, subfusiform, compressed, especially behind the anus, which is situated a little in advance of the middle of the length; caudal peduncle oblong and contracted towards the middle, but slightly narrowed towards the caudal fin.

Scales regularly imbricated, moderate in size, hexagonal, but apparently rather pentagonal, generally higher than long, with the posterior margin pectinated, the nucleus at or next to the posterior angle, from which striæ radiate towards the anterior border; the scales advance on the head.

Head scaly, the scales advancing forwards above to the snout, and covering the cheeks and opercula, cycloid and smaller above and on the cheeks; the head is rather small, considerably compressed and much higher than wide, nearly uniform in width, declining downwards to the snout; the latter is convex, and its periphery arched; the whole upper surface is convex and fleshy; the cheeks scarcely tumid. Eyes rather small, subcircular, entirely lateral, widely separated, and situated in the anterior half of the head. Opercula unarmed; operculum fully developed, its length being nearly twice as great as the interval between it and the eye.

Mouth with the cleft oblique, transverse, the periphery of each jaw semicircular, the supramaxillars ceasing nearly under the front of the orbit. Lower jaw nearly even with the upper. Intermaxillars, little protractile downwards, with the posterior processes short and wide, (connected), and the lateral branches thick and attenuated backwards, but near the ends with a thin, convex expansion above the posterior half. Supramaxillars longer than the intermaxillars, narrow, twisted, little curved, and behind compressed, and with a slight expansion downwards.

Tongue fleshy, moderate, subtruncated in front and free at its tip.

Teeth slender, conic, in a narrow band in each jaw, *moveable in the external row in the lower*. Palate smooth.

Branchial apertures lateral, nearly vertical, continued above in a short slit of the oculo-scapular groove, below curved slightly forwards between the membrane and throat; isthmus moderate.

Branchiostegal rays five.

Anal papilla long and compressed.

Dorsal fins two, the first generally with seven (6-8) spines, the anterior nearly uniform; the second, short and high, (I. 8-9); the rays generally, with the anterior branch simple and the posterior forked; the last ray free behind.

Anal fin nearly opposite and similar to dorsal.

Caudal fin large, convex behind.

Pectoral fins well developed, equally convex behind, with the rays well developed, and only one or two upper and lower ones simple.

Ventral fins inserted below the base of the pectoral, closely approximated but entirely free; each with five rays, the fourth of which is longest.

This genus is well distinguished by the combination of characters above given, especially the large scales, compressed and nearly uniformly wide declivous head, and the extension forwards of the branchial apertures above.

The genus *Eleotris*, from which the present is detached, as understood by Cuvier and his followers, appears to be rather entitled to the rank of a subfamily than to that of a genus. Valenciennes has distinguished the genus *Philypnus*. Bleeker recognizing the difference of many of the types referred to it, even after such restriction, has proposed to separate from it *Culius*, *Butis*, *Valenciennea* (= *Eleotriodes*) and *Belobranthus*; Poey has founded *Erotelis* and the writer has established the genera *Bostrichthys* and *Dormitator*. After all these dismemberments, there still remain, as types of distinct genera, the *Eleotris ophiocephalus* C. et V. (genus OPHIOCARA); *E. Mogurnda* Rich. (g. MOGURNDA); *E. gobioides* (g. GOBIOMORPHUS); *G. cyprinoides* (g. HYPSELEOTRIS); *E. macrondon* Blkr. (g. ODONTELEOTRIS); *E. strigata* C. et V. (g. CALLELEOTRIS) and *E. mi*

erolepis, Blkr. (g. *PTERELEOTRIS*), and perhaps still others. These various genera are distinguished by the form of the body, length of the fins, the form of the caudal, that of the head, the dentition, extent of branchial apertures, number, &c., of brauchiostegal rays and size of scales.

DORMITATOR LINEATUS Gill.

Dormitator somnulentus Gill, Catalogue of the Fishes of the Eastern coast of North America, p. 44.

Not *Dormitator somnulentus* Gill, ex. *Gd.*

The height enters about $4\frac{1}{4}$ times in the total length; the head about $4\frac{1}{2}$ times; the diameter of the eye about equals the snout and two-thirds of the head's length. The caudal forms a fourth of the length; the pectoral equals a fifth; the ventral does not extend to the anus, and is rather shorter than the pectoral.

D. VII. I. 10. A. I. 10. P. 14.

There were, apparently, thirty-one or two oblique rows of scales, and nine longitudinal ones between the origin of the second dorsal and the anal.

The color is brownish-yellow, thickly punctulated with darker, with a dark line running along the middle of each row of scales, and with a dark vertical blotch on the scapular region. The head had, apparently, two dark longitudinal bands. The dorsal and anal fins have two rows of darker spots on the basal half, and a fainter one beyond; they are also like the other fins, punctulated with minute darker dots.

A single specimen, about three inches long, is in the collection of the Smithsonian Institution, and was sent from Savannah, Georgia. It was referred to as *Dormitator somnulentus* in the "Catalogue of the Fishes of the Eastern coast," but it differs from that species in color, as well as slightly in proportions.

On the genus **PERIOPHTHALMUS** of Schneider.

BY THEODORE GILL.

In examining the different species of the genera *Periophthalmus* and *Boleophthalmus*, attention was arrested by the very trenchant differences existing between the *Periophthalmus Kœlreuteri* and *P. Schlosseri*, which indicated generic distinction. It is therefore proposed to restrict the name *Periophthalmus* to the species having the characters indicated in the following diagnosis, while for the *P. Kœlreuteri* the generic name *Euchoristopus* may be employed. The *Periophthalmineæ* may be distributed as follows:

- I. Teeth of jaws vertical, D. (IV—XV.) I. 11—12. A. I. 10—12.
 - α. Scales on head and body well developed and conspicuous. Second dorsal and anal fins nearly equal. Ventral fins in adult nearly infundibuliform..... *Periophthalmus*.
 - β. Scales on body and head minute. Anal fin contracted. Ventral fins always distinct..... *Euchoristopus*.
- II. Teeth of the lower jaw horizontal. D. V. I. 24—27. A. L. 23—25.
 - α. Scales small but conspicuous..... *Boleophthalmus*
 - β. Scales very minute, inconspicuous or obsolete in front. (*Bol. aucupatorius* Rich.)..... *Boleops*.

Genus **PERIOPHTHALMUS** (Bl., Schneid.)

Body much compressed, with the back rectilinear, gradually declining to the caudal fin, to which the rectilinear inferior outline converges still more slowly. Anus submedian.

1863.]